

What is claimed is:

1. (Currently Amended) A system for processing workpieces, comprising:

a frame;

a deck on the frame;

a plurality of processor locating elements on the deck;

a plurality of workpiece processors on the deck;

a robot moveable between the processors, for loading and unloading workpieces into and out of the processors; and

with substantially each processor having two or more [locating] positioning elements, with each [locating] positioning element engaging a deck locating element on the deck, to locate the processor[s] on the deck with sufficient precision to allow replacement of a processor and operation of the system without a need to recalibrate the robot.

2. (Original) The system of claim 1 further comprising a robot track supported on the frame, and with the robot moveable along the robot track.

3. (Currently Amended) The system of claim 1 with at least one of the processors comprising a lower rotor, and with the engagement of the mounting ring and the processor [locating] positioning elements positioning the lower rotor of the processor to within +/- 0.02 inches relative to the position of the robot.

4. (Original) The system of claim 1 with the deck comprising a top panel and a bottom panel, and bracing attaching the top panel to the bottom panel.

5. (Currently Amended) The system of claim 1 wherein the [locating] positioning elements comprise tapered pins.

6. (Currently Amended) The system of claim 1 wherein the [locating] positioning elements comprise openings in the deck adapted to engage with pins on the mounting ring of the processors.

7. (Original) The system of claim 1 wherein the robot is moveable along a rail structure rigidly attached to the frame.

8. (Original) The system of claim 1 wherein the processors are interchangeable without recalibration of the robot.

9. (Original) The system of claim 6 further comprising a bushing in one or more of the openings.

10. (Original) The system of claim 1 with the frame including first and second plates joined to the deck, and first and second interior side plates joined to the deck and to the end plates.

11. (Original) The system of claim 10 further including first and second outer side plates joined to the deck and to the first and second end plates.

12. (Original) The system of claim 11 further comprising a platform joined to the first and second end plates and to the first and second interior side plates, and with the robot moveable on a track on the platform.

13. (Original) The system of claim 1 wherein the processors are arranged in first and second parallel columns and with the robot moveable linearly between the columns.

14. (Original) A system for processing workpieces, comprising:

a frame;

a deck on the frame;

a plurality of workpiece processor positions on the deck;

a robot moveable between the processor positions; and

locating means for locating a first processor or a second processor at one of the processor positions on the deck with sufficient precision so that the robot can load and unload workpieces into the first or second processor, without recalibrating the robot.

15. (Currently Amended) The system of claim 14, with the [locating] positioning means comprising a mounting ring on the first and second processors engaging two or more [locating] positioning elements on the deck, to precisely locate the processor on the deck.

16. (Currently amended) The system of claim 14 with the locating positioning means comprising at least two precision locating positioning elements on each of the first and second processors, and at least two complementary precision locating positioning elements on the deck at one of the workpiece processor positions.

17. (Original) The system of claim 14 with the locating means including a rigid connection between robot track, on which the robot moves, and the deck.

18. (Currently Amended) A method for operating a workpiece processing system, comprising the steps of:

removing a first processor from a first position on a support surface of the system;

installing a second processor into the first position in the system;

precisely locating the second processor in the first position by engaging first and second precision locating positioning elements on the second processor with first and second precision locating positioning elements on a support surface of the system; and

moving a robot to load and unload a workpiece into and out of the second processor, without recalibrating the robot.

19. (Original) A system for processing workpieces, comprising:

a processor having an upper fluid outlet;

a valve assembly;

a fluid supply line extending from the valve assembly into the processor, to supply fluid to the upper fluid outlet;

a first and second valves in the valve assembly;

a first liquid source connecting to the first valve, for supplying a first fluid to the processor; and

a pump connecting to the second valve, for pumping the first fluid out of the supply line and back to the first fluid source.

20. (Original) The system of claim 19 with the pump comprising:

an inlet check valve;

an outlet check valve;

an air pressure operated bellows; and

a spring associated with the bellows.

21. (Original) The system of claim 20 wherein at least one of the inlet and outlet check valves includes a ball which seals against a valve seat only via fluid pressure.

22. (Original) A system for processing workpieces, comprising:

a processor;

a valve assembly;

a fluid supply line extending from the valve assembly into the processor;

a first, second, third and fourth valves in the valve assembly;

a first liquid source connecting to the first valve, and a second liquid source connecting to the second valve;

a pump connecting to the third valve, for pumping one of the first and second fluids out of the supply line; and

an aspirator connecting to the fourth valve.

23. (Original) A method for processing a workpiece, comprising the steps of:

placing the workpiece in a processor;

spinning the workpiece;

opening a first valve to supply a first liquid to the spinning workpiece via a liquid supply line;

closing the first valve;

opening a second valve connected to a suction pump;

actuating the pump to draw the first liquid out of the supply line and into a first liquid source;

turning the pump off;

closing the second valve;

opening a third valve to supply a second liquid to the spinning
workpiece;

closing the third valve; and

opening a fourth valve connected to an aspirator, to draw the
second liquid out of the supply line and into a drain line.

24. (Currently amended) A workpiece processor comprising:

a head including a first rotor;

a base including a second rotor engageable with the first rotor to
form a process chamber;

at least one liquid inlet connecting a source of liquid into the
process chamber;

at least one outlet for removing liquid from the process chamber;

and

at least one precision [locating] positioning element on the base,
for precisely locating the base within a processing system.

25. (Currently amended) The processor of claim 24 wherein the
precision [locating] positioning element comprises a mounting ring having two or more
openings adapted to engage with locating pins on a deck of a processing system.

26. (Currently amended) A workpiece processor, comprising:

a first rotor;

a second rotor engageable with the first rotor, to form a process
chamber;

a base associated with the second rotor; and
at least one first [locating] positioning element on the base
engageable with a complimentary second [locating] positioning element on a surface
supporting the base.